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UNITED STATES PATENT APPLICATION

of

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for

AUTOMATICALLY ADJUSTABLE PILLOW

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

Your petitioners, **Hassan Mohrekesh**, citizen of Iran, whose residence and postal mailing address is **2441 Coraview Ln., Rowland Height, CA 91748**, **Alireza Hajakbari**, citizen of Iran, whose residence and postal mailing address is **2441 Coraview Ln., Rowland Height, CA 91748,** and **Mohammad Reza Hajakbari**, citizen of Iran, whose residence and postal mailing address is **2441 Coraview Ln., Rowland Height, CA 91748** pray that they may preserve their rights to letters patent by this patent application as the inventors of an **AUTOMATICALLY ADJUSTABLE PILLOW** as set forth in the following specification.

AUTOMATICALLY ADJUSTABLE PILLOW

This application claims the benefit of U.S. Provisional Application No. 60/421,886, filed October 28, 2002.

FIELD OF THE INVENITON

The present invention relates generally to adjustable pillows and, more particularly, the present invention relates to an adjustable pillow that may be automatically and variably adjusted to reduce snoring or neck discomfort, or both.

BACKGROUND OF THE INVENTION

Pillows and headrests used for therapeutic support are well known to those skilled in the art. It is well known to provide a pillow or head support that reduces or minimizes head or neck discomfort as well as to attempt to reduce snoring by an individual. Various types of supports have been provided in the art that have met with some degree of success, but are still limited in their effectiveness. Some such supports include contoured pillows that are designed to cradle the head in such a way as to improve the support of the muscles to minimize any tension or stress. These types of supports typically reduce neck tension and therefore reduce neck soreness after use. Further, since each individual is different from one another, there are other types of head supports that can be adjusted either manually or through mechanical means.

One such head support includes placing additional bolsters within the support to provide an optimal comfort level for the user. This comfort level typically is desired to reduce snoring or to alleviate muscle fatigue. A problem with these types of supports is that they need to be adjusted prior to sleep and are not adjustable during the sleep phase.

Additional pillows or supports have incorporated means for adjusting the pillow's firmness level and height level using mechanical means such as air pumps. The air pumps may be electrical or hand operated and the user selects a particular pressure that is suitable to the user. Unfortunately, these types of systems still do not adjust during the sleep phase as the user is asleep and cannot provide fine tune adjustment to minimize neck soreness or reduce snoring.

Further, it has been proposed in the art to provide sensors to detect when a user moves or to utilize sound or pressure transducers to detect when a user may actually be snoring. In

response to such detection, some action may be taken, but such has not been specifically defined within the art.

Accordingly, what is needed is a head support or pillow system that is able to minimize neck soreness or reduce snoring, or both, in an effective and efficient automated manner with or without the user's direct input.

SUMMARY OF THE INVENTION

According to the present invention, a head support for minimizing snoring or to reduce or prevent neck pain, is disclosed. The head support includes a pillow with a chamber that automatically and variably adjusts in height such that an individual's head can be lowered or raised as the chamber changes to variable heights. The head support further includes an automated adjustment device to cause the chamber to inflate or deflate or to raise or lower gently and automatically so as to reduce snoring or neck pain.

In another embodiment, the head support further includes a pressure sensor and a pressure generator. The pressure generator is coupled to the chamber within the pillow and senses the pressure within the chamber. The pressure sensor can be a transducer that senses audible sounds as well. The pressure generator is typically coupled to the pressure sensor and responds to signals generated by the pressure sensor to either increase or decrease the pressure within the chamber by either raising or lowering the height of the chamber. In one embodiment, the chamber is filled with a fluid, such as a gas or liquid and in another embodiment, the chamber may adjust in a mechanical fashion, such as a screw driven support that rises or lowers as driven by motors turning the screws.

Additional features and advantages of the invention will be apparent from the detailed description which follows, taken in conjunction with the accompanying drawings, which together illustrate, by way of example, features of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

While the specification concludes with claims particularly pointing out and distinctly claiming that which is regarded as the present invention, the advantages of this invention may be ascertained from the following description of the invention when read in conjunction with the accompanying drawings, in which:

FIG. 1 illustrates a simplified schematic diagram of a pillow support system, depicting a head support portion with an inner chamber and a control device coupled to the head support portion, according to an embodiment of the present invention;

FIG. 2 illustrates a simplified side view of the inner chamber of the pillow support system, depicting a mechanical bolster that rises or lowers with the aid of a motor coupled thereto, according to an embodiment of the present invention;

FIG. 3 illustrates a simplified cross sectional view of the head support portion, according to an embodiment of the present invention;

FIG. 4 illustrates a simplified cross-sectional view of an alternative head support portion, depicting a sensor and a pump device coupled to the inner chamber, according to an embodiment of the present invention; and

FIG. 5 illustrates a side view of the head support portion, depicting a range of height adjustability of the head support portion, according to an embodiment of the present invention.

DETAILED DESCRIPTION

Reference will now be made to the exemplary embodiments illustrated in the drawings, and specific language will be used herein to describe the same. It will nevertheless be understood that no limitation of the scope of the invention is thereby intended. Alterations and further modifications of the inventive features illustrated herein, and additional applications of the principles of the inventions as illustrated herein, which would occur to one skilled in the relevant art and having possession of this disclosure, are to be considered within the scope of the invention.

The present invention discloses a head support or pillow system that is utilized by a user to reduce neck discomfort or snoring, or both, or even eliminates them completely, during a sleep phase. The present invention accomplishes this by introducing an automatically adjustable chamber within the pillow or head support that changes motion and height of the support either intermittently or continuously throughout the sleep phase so as to gently move the head of the user, which results in reduced neck pain or snoring, or both.

FIG. 1 illustrates a top plan view of a schematic diagram of a head support or pillow support system 10 as embodied in the present invention. Such a pillow support system 10 can include a head support portion 12, which includes an inner chamber 14 defined therein. The inner chamber 14 is further coupled to a control device 16 that can include an operating switch 18. The inner chamber 14 can be filled with a fluid material, such as a gas or liquid, to adjust the pressure and height of the head support portion 12 during the sleep phase. The control device 16 causes the fluid to transfer between the inner chamber 14 and a reserve bladder 19, which may or may not be part of the control device 16. In one embodiment, a

liquid can be used as the fluid material, in which a separate reserve bladder 19 can be incorporated to store the liquid that is not actually in the inner chamber 14. In another embodiment, a gas can be used as the fluid material, wherein the air surrounding the user can be vented to the inner chamber 14 and obtained from the surrounding environment such that no separate chamber is necessary. In another embodiment, a separate chamber having a gas, such as nitrogen, oxygen and/or mixtures thereof, can be used to inflate and deflate the inner chamber 14.

The control device 16 can include various controls, switches and/or pre-programmed parameters to allow the user to finely tune the height of the inner chamber 14 prior to use and/or pre-select various types of cycles for varying the height of the inner chamber 14. Such a control device 16 can include controls and programming that can be implemented by one of ordinary skill in the art.

Additional mechanical types of bolsters for controlling the inner chamber 14 of the pillow support system 10 may also be utilized. One such bolster is illustrated in FIG. 2 that can include a screw drive 30 coupled to a motor 32 such that a platform 34 can rise up and down. In particular, the motor 32 can turn the screw drive 30 one direction and then a second direction to move the platform 34 up and down, as indicated by respective arrows 36 and 38. Multiple screws may also be utilized such that the platform 34 may raise and lower on different sides and/or at different heights to provide a more precise level of comfort adjustment for the user. Since the pillow support system 10 is designed to be utilized during a sleep stage, the motor 32 is preferably ultra-quiet with minimal vibration so as not to disturb the individual during the individual's sleep stage. Further still, the head support portion 12 (FIG. 1) is typically bolstered with additional materials, such as cotton, or cotton polyester blends, down feathers, therapeutic memory materials that have high density, all of which tend to provide an insulating effect to minimize the transmission of vibrations or sounds, or both, to the user during the height adjustment of the pillow support system 10. Further, the pillow support system 10 can include additional means for bolstering the head support portion 12 with additional batting materials prior to the sleep phase to provide greater comfort for the user.

FIG. 3 illustrates one embodiment of the head support portion 12 of the present invention. The head support portion 12 can include the inner chamber 14, which may include a cross-section that is generally rectangular. The inner chamber 14 can also include a cross-section that is generally polygonal, round or oval shape, or the like.

FIG. 4 illustrates another embodiment of the head support 12 with a modified version of the inner chamber 14. In particular, the inner chamber 14 can include a unique curved cross-sectional shape to which the outer portion of head support portion 12 may conform. This shape of the inner chamber 14 can be a customized shape that is illustrative of different shapes that may be incorporated for the inner chamber 14.

Further, in another embodiment, one or more sensors 20 and a pump device 22 can be coupled to the inner chamber 14. The one or more sensors 20 can be a pressure sensor, a vibration sensor and/or an acoustical sensor or transducer, or combinations thereof that can detect when a patient is snoring and then activate the pump device 22 to begin the height adjustment of the head support 12 by filling or emptying the inner chamber 14. The pump device 22 may be coupled to the control device 16 (FIG. 1), where the actual pump mechanics may be stored separately from the inner chamber 14, but include communication therewith to allow the fluid to transfer between the inner chamber 14 and the reserve bladder 19 or the outside environment, as necessary. Further, the one or more sensors 20 can be coupled to the control device 16 to prompt and activate the pump device 22, thereby changing the height of the head support portion 12 by inflation and/or deflation.

FIG. 5 illustrates another embodiment of the pillow support system 10 where a height range for adjusting the pillow support portion 12 is depicted. During an initial input setting of the control device 16, the user can select a particular height as the ideal beginning point. During the sleep phase, the pillow support system 10 can, automatically and hands-free, cause the pillow to change height either intermittently or constantly throughout the sleep phase in a very slow and gentle manner ranging between a minimum height H_{MIN} and a maximum height H_{MAX}, which may be a difference of either one inch to four inches, but not limited thereto. The change in height of the head support portion 12 is intended to adjust in a slow and gentle manner so as not to disturb the individual during the sleep phase as well as not to cause discomfort from any sudden movement that would be undesirable. The height adjustment or cycle may occur at pre-selected time periods, such as every fifteen minutes, every half hour and/or every hour, by rising from the minimum height H_{MIN} to the maximum height H_{MAX} and then back again. This height adjustment or cycle can be intermittent or continuous in oscillation, whichever is desired by the user and whichever provides the best possible reduction of neck soreness or snoring, or both. With this arrangement, the height adjustment and cycle type (i.e., intermittent, continuous) can be pre-selected by the user with various controls on the control device 16 (FIG. 1) prior to sleeping and facilitate such height adjustment automatically and hands-free of the user while sleeping.

Referring to FIGS. 1, 4 and 5, it has been determined that through the steady adjustment of the height of the pillow support during the sleep phase, whether it is done intermittently or continuously, there can be reduced neck tension as well as reduced snoring. In some cases, elimination of neck soreness and snoring has been achieved. Further, by incorporation of the one or more sensors 20, the pillow support system 10 can respond to the first indication of noise and/or vibration generated by the individual should snoring begin and cause the pillow support system 10 to change height automatically in response to the sensed conditions. This allows the pillow to adjust only when absolutely necessary, such as when a condition warrants it either through snoring or even intermittent tossing and turning of the individual during the sleep phase. For example, should the individual toss and turn, this can be considered an indication of sleep discomfort, wherein the pillow support system 10 can sense this through the sensors 20 and institute a height adjustment until the user stops tossing and turning after a set period. In one embodiment, control logic within the control device 16 can interpret this information and provide the adjustment as necessary as known by one of ordinary skill in the art.

It is to be understood that the above-referenced arrangements are illustrative of the application for the principles of the present invention. Numerous modifications and alternative arrangements can be devised without departing from the spirit and scope of the present invention while the present invention has been shown in the drawings and described above in connection with the exemplary embodiments(s) of the invention. It will be apparent to those of ordinary skill in the art that numerous modifications can be made without departing from the principles and concepts of the invention as set forth in the following claims.